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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/629,528

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Tomohiro Ikegami

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EXAMINER

MALKOWSKI, KENNETH J

ART UNIT

PAPER NUMBER

2613

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Please find below and/or attached an Office communication concerning this application or proceeding.

57

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/629,528	IKEGAMI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kenneth J. Malkowski	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/27/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. JP08-212501 to Kazufumi et al. in view of U.S. Patent No. 5,822,356 to Jewell et al.

With respect to claims 1 and 6-7, Kazufumi discloses an optical proximity spatial transmission system for transmitting information data optically through a local space, the system comprising: a first communication device (page 2 paragraph 11 (rotating cylinder device))(Figure 5 (upper cylinder with an arrow indicating rotation)) having at least one of a first light emitter (1, Fig 5) or first photo detector installed thereon (4, Fig 5); a second communication device (page 2 paragraph 11 (fixed cylinder device))(Figure 5 (lower cylinder)) having installed thereon at least one of a second photodetector which detects light from the first light emitter (2, Fig 5 (shown communicating with the first laser diode))(page 3 paragraph 14 (signal 41 is transmitted to photodiode 2)) or a second light emitter which emits light toward the first photodetector (3, Figure 5 (shown emitting light via arrow 42 to the first photo diode))(page 3 paragraph 14 (signal 42 is transmitted toward the first photodetector)); and wherein the first communication device being rotatable around an axis thereof aligned

with an optical axis of at least one light outgoing from the first light emitter or light incident upon the first photodetector (Figure 5 shows the axis of rotation on the upper cylinder which is formed at a right angle to arrows 41 and 42 depicting outgoing and incident light, thereby rotating itself around an axis aligned with said light)) while the second communication device is fixed on the optical axis (page 2 paragraph 2 (transmission occurs between a rotation section and a fixed section)). However, Kazufumi fails to disclose an anti-scattering lens disposed either behind the first or second light emitter or in front of the first or second photo-detector. Despite this, anti-scattering lenses are a well-known advantageous implementation in the art. Jewell, from the same field of endeavor discloses an improved lens structure, which reduces the scattering and/or reflection losses in an optical cavity (abstract)(Figure 4B)(column 5 lines 31-32 (anti-scatter lens)). Therefore, it would have been obvious to one of ordinary skill in the art to implement the anti-scatter lens as taught by Jewell either behind the first or second light emitter or in front of the first or second photo-detector. The motivation for using an anti-scatter lens would in such a way would have been to enhance spontaneous emission and also reduce scattering and thereby reduce power loss within the transmission system (Jewell (column 3 lines 48-63)).

With respect to claim 4, Kazufumi in view of Jewell disclose the optical proximity spatial transmission system as set forth in claim 1, wherein the information data is transmitted in a base band domain (Kazufumi: Figures 1-3 and 5 show that there is no modulation occurring after light emission at photodiodes 2 or 4 such that the transmitted light is in the base band domain).

With respect to claim 5, Kazufumi in view of Jewell disclose the optical proximity spatial transmission system as set forth in claim 1, wherein the transfer rate of the information data is 200 Mbps or more. Kazufumi discloses an optical transmission system (page 2 paragraph 8). Optical transmission systems inherently transmit at 200 Mbps or more. Applicant admits as much on page 2 paragraph 6 as well as pages 3-4 paragraphs 2 and 1 respectively (use of a communication oriented laser diode permits communications at a speed of about several Ghz to about several ten Ghz)).

With respect to claim 9, Kazufumi in view of Jewell disclose the optical proximity spatial transmission system as set forth in claim 7, wherein optical spatial transmission is done in a space for rotation bearing of the rotating drum (page 2 paragraph 11 (transmission system with a rotating cylinder side), formed in the rotating and stationary drums of the rotating drum head unit (light sensing portion is attached to the fixed side. Moreover head chip is arranged to a rotating cylinder side))(Figures 1-6 all include depictions of said fixed and rotating sides interacting with each other in a transmission format)).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. JP08-212501 to Kazufumi et al. in view of U.S. Patent No. 5,822,356 to Jewell et al. and further in view of U.S. Patent No. 4,753,506 to Einhorn et al.

With respect to claims 2, Kazufumi in view of Jewell disclose the optical proximity spatial transmission system as set forth in claim 1, however, Kazufumi in view of Jewell fail to specifically disclose that the spot diameter, of light emitted from the light emitter toward the photodetector, at the light emitter is larger than an oscillation in a direction of

Art Unit: 2613

an off-axis deviation caused by the rotation and also larger than rotation. Einhorn, from the same field of endeavor discloses an optical transmission with a rotating cylinder transmitting to a non-rotating member outside of a rotating axis (column 2 lines 43-49). Einhorn teaches using an optical transmission path and a detector for said path wherein the detection areas constitute a smaller area than the optical transmission path (column 3 lines 1-8) such that there is continuous optical communication with the transmitted signal (abstract)(figure 1). Therefore, it would have been obvious to one of ordinary skill in the art to implement the spot diameter implementation as taught by Einhorn into the optical transmission system as taught by Kazufumi in view of Jewell. The motivation for doing so would have been to minimize the need for precise axial alignment between the rotating and non-rotating members (Einhorn: column 2 lines 45-48) thereby creating an optical transmission path wherein light emitter is larger than oscillation in a direction of an off-axis deviation caused by rotation.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. JP08-212501 to Kazufumi et al. in view of U.S. Patent No. 5,822,356 to Jewell et al. and further in view of U.S. Patent No. 5,469,423 to Shinoda et al.

With respect to claim 3, Kazufumi in view of Jewell disclose the optical proximity spatial transmission system as set forth in claim 1, however, Kazufumi in view of Jewell do not specifically disclose that a spot diameter, of light emitted from one of the first or second light emitter toward one of the photodetector, at the one of the first or second light emitter is larger than the one of the first and second photo-detector. However, manipulating a spot diameter to decrease said diameter prior to reaching a photo-

Art Unit: 2613

detector is well known in the art as a possible advantage to proximity optical transmission systems. Shinoda, from the same field of endeavor discloses an optical transmission system wherein an expanded spot diameter from a light emitter is made smaller before reaching a photo detector (column 8 lines 40-54). Therefore, it would have been obvious to one of ordinary skill in the art to implement the diameter narrowing technique used in the photo-detection process as taught by Shinoda in the optical transmission system as taught by Kazufumi in view of Jewell. The motivation for doing so would have been to reduce the amount of light lost from the transmitted laser beam (Shinoda: column 8 lines 48-54).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. JP08-212501 to Kazufumi et al. in view of U.S. Patent No. 5,822,356 to Jewell et al. and further in view of Japanese Patent No. JP05-135305

With respect to claim 8, Kazufumi in view of Jewell disclose the optical proximity spatial transmission system as set forth in claim 1, including a light emitter and/or photodetector (1, Fig 5) on the rotating-side circuit board (page 2 paragraph 11 (rotating cylinder device))(Figure 5 (upper cylinder with an arrow indicating rotation)) connected to the photodetector and/or light emitter (4, Fig 5) on the stationary-side circuit board (page 2 paragraph 11 (fixed cylinder device))(Figure 5 (lower cylinder)); and an anti-scattering lens is provided between the light emitter and/or photo-detector on the rotating- or stationary-side circuit board. However, Kazufumi in view of Jewell fail to specifically disclose an optical fiber aiding the connection between said emitter and said photo-detector. Seigo, from the same field of endeavor discloses a rotating transmitter

page 4 paragraph 36) that transmits optically to an optical receiver station (page 4 paragraph 42). Seigo further discloses using an optical fiber to aide in said optical transmission (page 4 paragraphs 43-46). The motivation for doing so would have been to condense transmitted light thereby reducing power loss (page 4 paragraph 46).

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to optical rotational transmission systems in general:

U.S. Patent No. 5,796,559 is cited to show optical transmission with a drum assembly

U.S. Patent No. 4,967,290 is cited to show optical transmission with a rotational module

U.S. Patent No. 4,973,123 is cited to show optical transmission with rotary coupling

U.S. Patent No. 5,343,342 is cited to show magnetic recording with playback in an optical setting

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Malkowski whose telephone number is (571) 272-5505. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2613

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KJM 8/4/06



KENNETH VANDERPUYE  
SUPERVISORY PATENT EXAMINER